

# HP StorageWorks Performance Control Export Tool Reference Guide

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HP Performance Control Export Tool Reference Guide

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# Preface

The *Performance Control Export Tool Reference Guide* provides additional instructions for using the export tool.

This reference guide makes the following assumptions:

- The user has a background in data processing and understands XP disk arrays and their basic functions.
- The user is familiar with Command View.
- The user has read and understands the *HP StorageWorks Command View XP for XP Disk Arrays User Guide*.
- The user is familiar with the operating system (for example, Windows® and Solaris®) and web browser software (for example, Internet Explorer and Netscape) on the system hosting the Command View software.

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# Chapter 1 Overview of Auto LUN XP

Auto LUN XP lets you monitor and tune disk array performance. Its major components are:

- Auto LUN XP
- HP Performance Control XP (henceforth, referred to as *PFC*)

Auto LUN XP lets you obtain usage statistics about physical hard disk drive, logical volumes, processors, or other resources in your disk array. Auto LUN XP also lets you obtain statistics about workloads on disk drives and traffic between hosts and the disk array. The Auto LUN XP pane displays a line graph that indicates changes in the usage rates, workloads, or traffic. You can view information in the pane, analyze trends in disk I/Os, and detect peak I/O time. If the system performance is low, you can use information in the pane to detect bottlenecks in the system.

Auto LUN XP lets you balance the workload among hard disk drives, logical volumes, and processors in order to remove bottlenecks from your system. If Auto LUN XP indicates that a large number of I/O operations are made to some hard disk drives, you can use Auto LUN XP to distribute workloads to other disk drives.

For details on Auto LUN XP and HP Performance Control XP, see the *HP StorageWorks Command View XP for XP Disk Arrays User Guide*.

## Chapter 2 Exporting Monitoring Data to Files

Use the Export Tool to export monitoring data (statistics) displayed in the Auto LUN XP pane to text files. You can also use the Export Tool to export monitoring data on remote copy operations performed by Continuous Access XP or TrueCopy for z/OS® remote copy operations. Once you have exported the monitoring data to text files, you can import it into word processor documents. You can also import the monitoring data into spreadsheet or database software for analysis.

**Note:** You cannot use the Export Tool to export monitoring data on remote copy operations performed by Continuous Access XP Journal and Universal Replicator for z/OS®, which is displayed in the **CA Monitor** and **URz Monitor** panes.

Here is an example of a text file imported into spreadsheet software:

Transfer rates for LUs (Filename: LU\_IOPS.csv)

LU_IOPS.csv					
Serial number : 28528(RAID500)		Indicates that the disk array serial number is 28528. The word in parentheses is a code that indicates the disk array type.			
From : 2004/11/25 10:48		Indicates that the data was obtained from 10:48 to 10:52 on Nov. 25, 2004. <b>Sampling rate: 1</b> indicates that monitoring was performed every minute (at a one-minute interval).			
To : 2004/11/25 10:52					
sampling rate : 1					
Nb.	time	CL1-B.00(1B-G00).01	CL1-B.00(1B-G00).02	CL1-B.01(WinNT).00	CL1-B.01(WinNT).01
1	2004/11/25 10:49	10	20	30	40
2	2004/11/25 10:50	12	22	30	35
3	2004/11/25 10:51	12	21	29	35
4	2004/11/25 10:52	10	19	32	38
		Indicates monitoring data. If a value is -1, the value indicates that Performance Monitor failed to obtain the data for some reason. For detailed information, refer to the troubleshooting information later in this document.			

### Notes:

- In this LU\_IOPS.csv file, the last two digits of a table column heading (such as **01** and **02**) indicate a LUN. For example, the heading **CL1-B.00(1B-G00).01** indicates the port **CL1-B**, the host group ID **00**, the host group name **1B-G00**, and the LUN **01**.
- If you export monitoring data about concatenated parity groups, the resulting CSV file does not contain column headings for the concatenated parity groups. For example, if you export monitoring data about a concatenated parity group named **1-3[1-4]**, you will be unable to find **1-3[1-4]** in column headings. To locate monitoring data about **1-3[1-4]**, find the **1-3** column or the **1-4** column. Either of these columns contains monitoring data about **1-3[1-4]**.

Figure 1 Sample Text File

### Notes:

- When you run the Export Tool, text files are usually compressed in a ZIP-format archive file. To be able to open a text file, you must decompress the ZIP file to extract the text files.
- Text files are in CSV (comma-separated value) format, in which values are delimited by commas. Many spreadsheet applications can be used to open CSV files.
- Do not run multiple instances of the Export Tool simultaneously. If you run multiple instances, the SVP may be overloaded and a timeout error may occur.



## 2.1 Files to be Exported

The Export Tool enables you to save monitoring data in the Auto LUN XP pane into files (see Table 2 through Table 9). The Export Tool also enables you to save monitoring data about remote copy operations displayed in the **CA Monitor** and **TCz Monitor** panes into files (see Table 10). The Export Tool usually compresses monitoring data in ZIP files. When you want to use a text editor or spreadsheet software to view or edit the monitoring data, you usually need to decompress the ZIP files to extract CSV files. However, if you want the Export Tool to save monitoring data in CSV files instead of ZIP files, you can force the Export Tool to do so.

Table 1 shows the correspondence between the panes of Auto LUN XP and the monitoring data that can be saved by the Export Tool. For details on the ZIP files and CSV files that are saved, see the tables indicated in the "**See**" column.

Table 1 Auto LUN XP Panes and Monitoring Data that can be Saved by the Export Tool

Pane	Monitoring Data	See
<b>Physical</b> tab in the <b>Auto LUN XP</b> pane	Statistics about resource usage and write pending rates	Table 2
<b>LDEV</b> tab in the <b>Auto LUN XP</b> pane	Statistics about parity groups or external volume groups	Table 3
	Statistics about logical volumes in parity groups or in external volume groups	Table 4
<b>Port-LUN</b> tab in the <b>Auto LUN XP</b> pane	Statistics about ports	Table 5
	Statistics about host bus adapters connected to ports	Table 6
	Statistics about LU paths	Table 7
<b>WWN</b> tab in the <b>Auto LUN XP</b> pane	Statistics about SPM groups	Table 8
	Statistics about host bus adapters belonging to SPM groups	Table 9
<b>TC Monitor</b> pane and <b>TCz Monitor</b> pane	Statistics about remote copy operations by Continuous Access XP and TrueCopy for z/OS®	Table 10

Table 2 Files Containing Statistics about Resource Usage and Write Pending Rates

ZIP File	CSV File	Data Saved in the File
PhyPG_dat.ZIP	PHY_Long_PG.csv	Usage rates for parity groups in long range
	PHY_Short_PG.csv	Usage rates for parity groups in short range
PhyLDEV_dat.ZIP	PHY_Long_LDEV_x-y.csv	Usage rates for logical volumes in a parity group in long range <b>Note:</b> "x-y" in the CSV filename is a parity group ID.
	PHY_Short_LDEV_x-y.csv	Usage rates for logical volumes in a parity group in short range <b>Note:</b> "x-y" in the CSV filename is a parity group ID.
PhyExG_dat.ZIP	PHY_ExG_Response.csv	Response time for external volume groups (the unit is millisecond*)
	PHY_ExG_Trans.csv	Amount of transferred data for external volume groups (the unit is KB/sec)
PhyExLDEV_dat.ZIP	PHY_ExLDEV_Response_x-y.csv	Response time for logical volumes in an external volume group (the unit is millisecond*) <b>Note:</b> "x-y" in the CSV filename is an external volume group ID.
	PHY_ExLDEV_Trans_x-y.csv	Amount of data transferred for logical volumes in an external volume group (the unit is KB/sec) <b>Note:</b> "x-y" in the CSV filename is an external volume group ID.
PhyProc_dat.ZIP	PHY_Long_CHP.csv	Usage rates for channel processors in long range
	PHY_Short_CHP.csv	Usage rates for channel processors in short range
	PHY_Long_DKP.csv	Usage rates for disk processors in long range
	PHY_Short_DKP.csv	Usage rates for disk processors in short range
	PHY_Long_DRR.csv	Usage rates for DRRs (data recovery and reconstruction processors) in long range
	PHY_Short_DRR.csv	Usage rates for DRRs (data recovery and reconstruction processors) in short range

ZIP File	CSV File	Data Saved in the File
PhyCSW_dat.ZIP	PHY_Long_MPA_CSW.csv	<ul style="list-style-type: none"> <li>Usage rates for access paths between channel adapters and cache memories in long range</li> <li>Usage rates for access paths between disk adapters and cache memories in long range</li> </ul>
	PHY_Short_MPA_CSW.csv	<ul style="list-style-type: none"> <li>Usage rates for access paths between channel adapters and cache memories in short range</li> <li>Usage rates for access paths between disk adapters and cache memories in short range</li> </ul>
	PHY_Long_MPA_SMA.csv	<ul style="list-style-type: none"> <li>Usage rates for access paths between channel adapters and the shared memory in long range</li> <li>Usage rates for access paths between disk adapters and the shared memory in long range</li> </ul>
	PHY_Short_MPA_SMA.csv	<ul style="list-style-type: none"> <li>Usage rates for access paths between channel adapters and the shared memory in short range</li> <li>Usage rates for access paths between disk adapters and the shared memory in short range</li> </ul>
	PHY_Long_CSW_CMA.csv	Usage rates for access paths between cache switches and cache memories in long range
	PHY_Short_CSW_CMA.csv	Usage rates for access paths between cache switches and cache memories in short range
	PHY_Long_Write_Pending_Rate.csv	Write pending rates in long range
	PHY_Short_Write_Pending_Rate.csv	Write pending rates in short range

\* 1 millisecond is one-thousandth of 1 second.

**Note:** The letters "x-y" in the CSV filename indicate a parity group or external volume group.

Table 3 Files Containing Statistics about Parity Groups or External Volume Groups

ZIP File	CSV File	Data Saved in the File
PG_dat.ZIP	PG_IOPS.csv	The number of read and write operations per second
	PG_TransRate.csv	The size of data transferred per second (the unit is KB/sec)
	PG_Read_IOPS.csv	The number of read operations per second
	PG_Seq_Read_IOPS.csv	The number of sequential read operations per second
	PG_Rnd_Read_IOPS.csv	The number of random read operations per second
	PG_CFW_Read_IOPS.csv	The number of read operations in "cache-fast-write" mode per second
	PG_Write_IOPS.csv	The number of write operations per second
	PG_Seq_Write_IOPS.csv	The number of sequential write operations per second
	PG_Rnd_Write_IOPS.csv	The number of random write operations per second
	PG_CFW_Write_IOPS.csv	The number of write operations in "cache-fast-write" mode per second
	PG_Read_Hit.csv	The read hit ratio
	PG_Seq_Read_Hit.csv	The read hit ratio in sequential access mode
	PG_Rnd_Read_Hit.csv	The read hit ratio in random access mode
	PG_CFW_Read_Hit.csv	The read hit ratio in "cache-fast-write" mode
	PG_Write_Hit.csv	The write hit ratio
	PG_Seq_Write_Hit.csv	The write hit ratio in sequential access mode
	PG_Rnd_Write_Hit.csv	The write hit ratio in random access mode
	PG_CFW_Write_Hit.csv	The write hit ratio in "cache-fast-write" mode
	PG_BackTrans.csv	The number of data transfer operations between cache memories and disk drives (for example, parity groups or external volume groups) per second
	PG_C2D_Trans.csv	The number of data transfer operations from cache memories and disk drives (for example, parity groups or external volume groups)
	PG_D2CS_Trans.csv	The number of data transfer operations from disk drives (for example, parity groups or external volume groups) to cache memories in sequential access mode
	PG_D2CR_Trans.csv	The number of data transfer operations from disk drives (for example, parity groups or external volume groups) to cache memories in random access mode

Table 4 Files Containing Statistics about Logical Volumes in Parity Groups or in External Volume Groups

ZIP File	CSV File	Data Saved in the File
LDEV_IOPS.ZIP	LDEV_IOPS_x-y.csv	The number of read and write operations per second
LDEV_TransRate.ZIP	LDEV_TransRate_x-y.csv	The size of data transferred per second (the unit is KB/sec)
LDEV_Read_IOPS.ZIP	LDEV_Read_IOPS_x-y.csv	The number of read operations per second
LDEV_Seq_Read_IOPS.ZIP	LDEV_Seq_Read_IOPS_x-y.csv	The number of sequential read operations per second
LDEV_Rnd_Read_IOPS.ZIP	LDEV_Rnd_Read_IOPS_x-y.csv	The number of random read operations per second
LDEV_CFW_Read_IOPS.ZIP	LDEV_CFW_Read_IOPS_x-y.csv	The number of read operations in "cache-fast-write" mode per second
LDEV_Write_IOPS.ZIP	LDEV_Write_IOPS_x-y.csv	The number of write operations per second
LDEV_Seq_Write_IOPS.ZIP	LDEV_Seq_Write_IOPS_x-y.csv	The number of sequential write operations per second
LDEV_Rnd_Write_IOPS.ZIP	LDEV_Rnd_Write_IOPS_x-y.csv	The number of random write operations per second
LDEV_CFW_Write_IOPS.ZIP	LDEV_CFW_Write_IOPS_x-y.csv	The number of write operations in "cache-fast-write" mode per second
LDEV_Read_Hit.ZIP	LDEV_Read_Hit_x-y.csv	The read hit ratio
LDEV_Seq_Read_Hit.ZIP	LDEV_Seq_Read_Hit_x-y.csv	The read hit ratio in sequential access mode
LDEV_Rnd_Read_Hit.ZIP	LDEV_Rnd_Read_Hit_x-y.csv	The read hit ratio in random access mode
LDEV_CFW_Read_Hit.ZIP	LDEV_CFW_Read_Hit_x-y.csv	The read hit ratio in "cache-fast-write" mode
LDEV_Write_Hit.ZIP	LDEV_Write_Hit_x-y.csv	The write hit ratio
LDEV_Seq_Write_Hit.ZIP	LDEV_Seq_Write_Hit_x-y.csv	The write hit ratio in sequential access mode
LDEV_Rnd_Write_Hit.ZIP	LDEV_Rnd_Write_Hit_x-y.csv	The write hit ratio in random access mode
LDEV_CFW_Write_Hit.ZIP	LDEV_CFW_Write_Hit_x-y.csv	The write hit ratio in "cache-fast-write" mode
LDEV_BackTrans.ZIP	LDEV_BackTrans_x-y.csv	The number of data transfer operations between cache memories and disk drives (for example, logical volumes) per second
LDEV_C2D_Trans.ZIP	LDEV_C2D_Trans_x-y.csv	The number of data transfer operations from cache memories and disk drives (for example, logical volumes)

ZIP File	CSV File	Data Saved in the File
LDEV_D2CS_Trans.ZIP	LDEV_D2CS_Trans_x-y.csv	The number of data transfer operations from disk drives (for example, logical volumes) to cache memories in sequential access mode
LDEV_D2CR_Trans.ZIP	LDEV_D2CR_Trans_x-y.csv	The number of data transfer operations from disk drives (for example, logical volumes) to cache memories in random access mode

**Note:** The letters "x-y" in the CSV filenames indicate a parity-group. For example, if the filename is LDEV\_IOPS\_1-2.csv, the file contains the I/O rate for each logical volume in the parity-group 1-2.

Table 5 Files Containing Statistics about Ports

ZIP File	CSV File	Data Saved in the File
Port_dat.ZIP	Port_IOPS.csv	The number of read and write operations per second
	Port_KBPS.csv	The size of data transferred per second (the unit is KB/sec)

Table 6 Files Containing Statistics about Host Bus Adapters Connected to Ports

ZIP File	CSV File	Data Saved in the File
PortWWN_dat.ZIP	PortWWN_xx_IOPS.csv	The I/O rate (that is, the number of read and write operations per second) for HBAs that are connected to a port
	PortWWN_xx_KBPS.csv	The size of data transferred per second between a port and the HBAs connected to that port (the unit is KB/sec)

**Notes:**

- The letters "xx" in the CSV filename indicate a port name. For example, if the filename is PortWWN\_1A\_IOPS.csv, the file contains the I/O rate for each host bus adapter connected to the CL1-A port.
- If files are exported to a Windows computer, CSV filenames may end with numbers (for example, PortWWN\_1A\_IOPS-1.csv and PortWWN\_1a\_IOPS-2.csv).

Table 7 Files Containing Statistics about LU Paths

ZIP File	CSV File	Data Saved in the File
LU_dat.ZIP	LU_IOPS.csv	The number of read and write operations per second
	LU_TransRate.csv	The size of data transferred per second (the unit is KB/sec)
	LU_Seq_Read_IOPS.csv	The number of sequential read operations per second
	LU_Rnd_Read_IOPS.csv	The number of random read operations per second

ZIP File	CSV File	Data Saved in the File
	LU_Seq_Write_IOPS.csv	The number of sequential write operations per second
	LU_Rnd_Write_IOPS.csv	The number of random write operations per second
	LU_Seq_Read_Hit.csv	The read hit ratio in sequential access mode
	LU_Rnd_Read_Hit.csv	The read hit ratio in random access mode
	LU_Seq_Write_Hit.csv	The write hit ratio in sequential access mode
	LU_Rnd_Write_Hit.csv	The write hit ratio in random access mode
	LU_C2D_Trans.csv	The number of data transfer operations from cache memories and disk drives (for example, LUs)
	LU_D2CS_Trans.csv	The number of data transfer operations from disk drives (for example, LUs) to cache memories in sequential access mode
	LU_D2CR_Trans.csv	The number of data transfer operations from disk drives (for example, LUs) to cache memories in random access mode

Table 8 Files Containing Statistics about SPM Groups

ZIP File	CSV File	Data Saved in the File
PPCG_dat.ZIP	PPCG_IOPS.csv	The number of read and write operations per second
	PPCG_KBPS.csv	The size of data transferred per second (the unit is KB/sec)

Table 9 Files Containing Statistics about Host Bus Adapters Belonging to SPM Groups

ZIP File	CSV File	Data Saved in the File
PPCGWWN_dat.ZIP	PPCGWWN_xx_IOPS.csv	The I/O rate (that is, the number of read and write operations per second) for HBAs belonging to an SPM group
	PPCGWWN_xx_KBPS.csv	The transfer rate for HBAs belonging to an SPM group (the unit is KB/sec)
	PPCGWWN_NotGrouped_IOPS.csv	The I/O rate (that is, the number of read and write operations per second) for HBAs that do not belong to any SPM group
	PPCGWWN_NotGrouped_100KBPS.csv	The transfer rate for HBAs that do not belong to any SPM group (the unit is KB/sec)

**Notes:**

- The letters "xx" in the CSV filename indicate the name of an SPM group.
- If files are exported to a Windows computer, CSV filenames may end with numbers (for example, PPCGWWN\_mygroup\_IOPS-1.csv and PPCGWWN\_MyGroup\_IOPS-2.csv).

Table 10 Files Containing Statistics about Remote Copy Operations by Continuous Access XP and TrueCopy for z/OS®

ZIP File	CSV File	Data Saved in the File
RemoteCopy_dat.ZIP	RemoteCopy.csv	<p>The following data in the whole disk array is saved:</p> <ul style="list-style-type: none"> <li>• The usage rate for sidefile cache</li> <li>• The total number of remote I/Os (read and write operations)</li> <li>• The total number of remote read I/Os</li> <li>• The total number of remote write I/Os</li> <li>• The number of errors that occur during remote I/O</li> <li>• The number of initial copy remote I/Os</li> <li>• The number of hits of initial copy remote I/Os</li> <li>• The average transfer rate (KB/sec) for initial copy remote I/Os</li> <li>• The number of migration copy remote I/Os</li> <li>• The number of hits of migration copy remote I/Os</li> <li>• The number of update copy remote I/Os</li> <li>• The number of hits of update copy remote I/Os</li> <li>• The average transfer rate (KB/sec) for update copy remote I/Os</li> <li>• The number of restore copy remote I/Os</li> <li>• The number of hits of restore copy remote I/Os</li> <li>• The number of asynchronous update copy remote I/Os</li> <li>• The number of asynchronous recordsets</li> <li>• The average transfer rate (KB/sec) for asynchronous update copy remote I/Os</li> <li>• The number of scheduled recordsets</li> <li>• The number of recordsets that do not arrive during the schedule</li> <li>• The number of remaining recordsets when the schedule is completed</li> <li>• The number of job activations of consistency manager</li> <li>• The percentage of completion of copy operations (that is, number of synchronized pairs / total number of pairs)</li> <li>• The number of tracks that have not yet been copied by the initial copy or resync copy operation</li> </ul>



## 2.2 Preparing for Using the Export Tool

This section explains how to prepare for using the Export Tool.

### 2.2.1 Requirements for Using the Export Tool

The following components are required to use the Export Tool:

- **A Windows computer or a UNIX computer**

The Export Tool runs on Windows computers and UNIX computers that can run Command View. If your Windows or UNIX computer is unable to run Command View, your computer is unable to run the Export Tool. For detailed information about computers that can run Command View, please see the *HP StorageWorks Command View XP for XP Disk Arrays User Guide*.

- **Java Runtime Environment (JRE)**

To be able to use the Export Tool, you must install Java Runtime Environment on your Windows or UNIX computer. If your computer runs Command View, JRE is already installed on your computer and you can install the Export Tool. If your computer does not run Command View but contains an appropriate version of JRE, you can install the Export Tool on your computer.

**Note:** The JRE version required for running the Export Tool is the same as the JRE version required for running Command View. For detailed information about the JRE version required for running Command View, please refer to *HP StorageWorks Command View XP for XP Disk Arrays User Guide*.

- **A user ID exclusively for use with the Export Tool**

If you want to use the Export Tool, you must create a user ID that will be used exclusively with the Export Tool. When you create the user ID, note the following:

- **Write permissions of local disk array programs**

If you use the Export Tool only to save the monitoring data into files, *do not* assign any write permission to the user ID for use with the Export Tool. If a user ID having write permission is used with the Export Tool, the disk array configuration might be changed in an unfavorable way by an unidentified user.

If you use the Export Tool not only to save monitoring data but also to start or stop monitoring and to change the gathering interval by the **set** subcommand, the user ID needs to have at least one of write permissions for Auto LUN XP, Continuous Access XP, and TrueCopy for z/OS®.

- **User types**

You can specify any user type for the user ID for use with the Export Tool.

If you specify "*storage administrator*" for the user ID, all the monitoring data described from Table 2 to Table 10 can be saved into files.

If you specify "*storage partition administrator*" for the user ID, monitoring data on remote copy operations (see Table 10) cannot be saved into files. Also, the functions of the Export Tool are limited. For details, see Chapter 5.

For detailed information about how to create a user ID, please refer to *HP StorageWorks Command View XP for XP Disk Arrays User Guide*.

### ■ The Export Tool program

The Export Tool is contained in the HP StorageWorks RAID Manager Library CD. For detailed information about how to install the Export Tool on a Windows computer, see section 2.2.2. For detailed information about how to install the Export Tool on a UNIX computer, see section 2.2.3.

## 2.2.2 Installing the Export Tool on a Windows Computer

To install the Export Tool on a Windows computer:

1. Create a directory on your Windows computer.  
In later steps, you will install the Export Tool on the new directory.
2. Insert the Program Products CD into the CD-ROM drive.
3. Locate the self-extracting file **export.EXE** in the directory `\program\monitor\win_nt` in your CD-ROM disc, and then copy **export.EXE** to the new directory that you created earlier.
4. Double-click **export.EXE** on your computer.

The Export Tool is installed. Also, a new directory named **export** is created.

#### *Notes:*

- The **export** directory contains a couple of files, which includes **runUnix.bat**. It is recommended that you delete **runUnix.bat** because this file is no longer needed.
- The Export Tool program is a Java class file and is located in the **export\lib** directory.

## 2.2.3 Installing the Export Tool on a UNIX Computer

To install the Export Tool on a UNIX computer:

1. Create a directory on your UNIX computer.  
In later steps, you will install the Export Tool on the new directory.
2. Insert the Program Products CD in the CD-ROM drive.
3. Do either of the following:
  - If you are using Solaris, please locate the archive file **export.tar** in the directory `/export_tool/solaris` in your CD-ROM disc, and then copy **export.tar** to the new directory that you created earlier.
  - If you are using HP-UX, please locate the archive file **export.tar** in the directory `/export_tool/hp-ux` in your CD-ROM disc, and then copy **export.tar** to the new directory that you created earlier.
4. Decompress **export.tar** on your computer.

The Export Tool is installed. Also, a new directory named **export** is created.

#### *Notes:*

- The **export** directory contains a couple of files, which include **runWin.bat**. It is recommended that you delete **runWin.bat** because this file is no longer needed.
- The Export Tool program is a Java class file and is located in the **export/lib** directory.

## 2.3 Using the Export Tool

To be able to export monitoring data, you must prepare a command file and a batch file. This section explains how to prepare a command file and a batch file, and then explains how to run the Export Tool.

- Preparing a command file (refer to section 2.3.1)
- Preparing a batch file (refer to section 2.3.2)
- Running the Export Tool (refer to section 2.3.3)

### 2.3.1 Preparing a Command File

To be able to run the Export Tool, you must write scripts for exporting monitoring data. When writing scripts, you need to write several subcommands in a *command file*. When you run the Export Tool, the subcommands in the command file execute sequentially and then the monitoring data is saved in files.

Here is a sample command file:

```
svpip 158.214.135.57      ; Specifies IP address of SVP
login expusr passwd      ; Logs user into SVP
show                     ; Outputs storing period to standard output
group PhyPG Long         ; Specifies type of data to be exported and type of
                        ; storing period
group RemoteCopy         ; Specifies type of data to be exported
shortrange 200410010850:200410010910
                        ; Specifies term of data to be exported for data stored
                        ; in short range
longrange 200409301430:200410011430
                        ; Specifies term of data to be exported for data stored
                        ; in long range
outpath out              ; Specifies directory in which files will be saved
option compress          ; Specifies whether to compress files
apply                   ; Executes processing for saving monitoring data in files
```

**Figure 2** Sample Command File

**Note:** In this file, a semicolon (;) indicates the beginning of a comment. Characters from a semicolon to the end of the line are regarded as a comment.

The subcommands in this command file are explained as follows:

- `svpip 158.214.135.57`  
This subcommand specifies that you are logging into the SVP whose IP address is 158.214.135.57. You must log into the SVP when using the Export Tool.  
The `svpip` subcommand specifies the IP address of the SVP. You must include the `svpip` subcommand in your command file. For detailed information about the `svpip` subcommand, refer to section 3.1.
- `login expusr passwd`  
This subcommand specifies that you use the user ID **expusr** and the password **passwd** to log into the SVP.  
The `login` subcommand logs the specified user into the SVP. You must include the `login` subcommand in your command file. For detailed information about the `login` subcommand, see section 3.3.

**Caution:** When you write the `login` subcommand in your command file, you must specify a user ID that should be used exclusively for running the Export Tool. See section 2.1 for reference.

**WARNING:** Secure files containing user IDs and password to prevent the information from being compromised and used for access by unauthorized people.

- `show`

This subcommand checks the SVP to find the period of monitoring data stored in the SVP and the data collection interval (that is called "gathering interval" in Auto LUN XP), and then outputs them to the standard output (for example, the command prompt) and the log file.

Auto LUN XP collects statistics by the two types of storing periods: *in short range* and *in long range*. The `show` subcommand displays the storing periods and the gathering intervals for these two types of monitoring data.

The following is an example of information that the `show` subcommand outputs:

Short Range	From: 2004/10/01 01:00 - To: 2004/10/01 15:00	Interval : 1min
Long Range	From: 2004/09/01 00:00 - To: 2004/10/01 15:00	Interval : 15min
Remote Copy	From: 2004/09/30 00:00 - To: 2004/10/01 15:00	

Short Range indicates the storing period and gathering interval of the monitoring data stored in short range. Long Range indicates those of the monitoring data stored in long range. In the above example, the monitoring data in short range is stored every 1 minute in the term of 1:00-15:00 on Oct. 1, 2004. Also, the monitoring data in long range is stored every 15 minutes in the term of Sep. 1, 2004, 0:00 through Oct. 1, 2004, 15:00. When you run the Export Tool, you can export monitoring data within these periods into files.

All the monitoring items are stored in short range, but a part of monitoring items is stored in both the short range and long range. For details on monitoring items that can be stored in long range, see section 3.7.

The use of the `show` subcommand is not mandatory, but you are recommended to include the `show` subcommand in your command file. If an error occurs when you run the Export Tool, you might be able to find the error cause by checking the log file for information issued by the `show` subcommand. For detailed information about the `show` subcommand, refer to section 3.4.

- `group PhyPG Long` and `group RemoteCopy`

This subcommand specifies the type of data that you want to export. Specify an operand following `group` to define the type of data to be exported. Basically, monitoring data stored in short range is exported, but you can export monitoring data stored in long range when you specify some of the operands.

The `group PhyPG Long` subcommand in Figure 2 specifies to export usage statistics about parity groups in long range. Also, the `group RemoteCopy` subcommand specifies to export statistics about remote copy operations by Continuous Access XP and TrueCopy for z/OS® in short range. You can describe multiple lines of the `group` subcommand to export multiple monitoring items at the same time.

For detailed information about the `group` subcommand, see section 3.5 .

- `shortrange 200410010850:200410010910`, and  
`longrange 200409301430:200410011430`, and  
`remotecopyrange 200409301430:200410011430`

The `shortrange` and `longrange` subcommands specify the term of monitoring data to be exported. Use these subcommands when you want to narrow the export-target term within the stored data. You can specify both the `shortrange` and `longrange` subcommands at the same time. The difference between these subcommands is as follows:

- The `shortrange` subcommand is valid for monitoring data in short range. You can use this subcommand to narrow the export-target term for all the monitoring items you can specify by the `group` subcommand.

Specify a term within "Short Range From *XXX* To *XXX*" which is output by the `show` subcommand.

- The `longrange` subcommand is valid for monitoring data in long range. You can use this subcommand only when you specify the `PhyPG`, `PhyLDEV`, `PhyProc`, or `PhyCSW` operand with the `Long` option in the `group` subcommand. (The items that can be saved by these operands are the monitoring data displayed in the **Physical** tab of the **Auto LUN XP** pane with selecting **longrange**.)

Specify a term within "Long Range From *XXX* To *XXX*" which is output by the `show` subcommand.

In Figure 2, the `shortrange 200410010850:200410010910` subcommand specifies the term 8:50-9:10 on Oct. 1, 2004. This subcommand is applied to the `group RemoteCopy` subcommand in this example. When you run the Export Tool, it will export the statistics about remote copy operations by Continuous Access XP and TrueCopy for z/OS® in the term specified by the `shortrange` subcommand.

Also, in Figure 2, the `longrange 200409301430:200410011430` subcommand specifies the term from Sep. 30, 2004, 14:30 to Oct. 1, 2004, 14:30. This subcommand is applied to the `group PhyPG Long` subcommand in this example. When you run the Export Tool, it will export the usage statistics about parity groups in the term specified by the `longrange` subcommand.

If you run the Export Tool without specifying the `shortrange` or `longrange` subcommand, the monitoring data in the whole storing period (data in the period displayed by the `show` subcommand) will be exported.

For detailed information about the `shortrange` subcommand, see section 3.6.

For detailed information about the `longrange` subcommand, see section 3.7.

- `outpath out`

This subcommand specifies that files should be saved in the directory named `out` in the current directory.

The `outpath` subcommand specifies the directory in which files should be saved. For detailed information about the `outpath` subcommand, see section 3.8.

- `option compress`

This subcommand specifies that the Export Tool should compress monitoring data in ZIP files.

The `option` subcommand specifies whether to save files in ZIP format or in CSV format. For detailed information about the `option` subcommand, see section 3.9.

- **apply**  
This subcommand saves monitoring data in files. For detailed information about the **apply** subcommand, see section 3.10.

When you install the Export Tool, the file **command.txt** will be stored in the **export** directory. The **command.txt** file contains sample subcommands for your command file. It is recommended that you customize the subcommands in **command.txt** according to your needs. For detailed information about subcommand syntax, see Chapter 3.

## 2.3.2 Preparing a Batch File

To run the Export Tool, you need a batch file. The Export Tool starts and saves monitoring data in files when you execute the batch file.

The installation directory for the Export Tool (that is, the **export** directory) contains two batch files: **runWin.bat** and **runUnix.bat**. If your computer runs Windows, use **runWin.bat**. If your computer runs UNIX, use **runUnix.bat**.

Figure 3 illustrates scripts in **runWin.bat** and **runUnix.bat**. These batch files include a command line that executes a java command. When you execute your batch file, the java command executes subcommands specified in your command file and then saves monitoring data in files.

Batch file for Windows computers (**runWin.bat**)

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dmd.command=command.txt
-Dmd.logpath=log sanproject.getmondat.RJMdMain ↵
pause ↵
```

Batch file for UNIX computers (**runUnix.bat**)

```
#!/bin/sh ↵
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dmd.command=command.txt
-Dmd.logpath=log sanproject.getmondat.RJMdMain ↵
```

**Note:** The "↵" symbol indicates the end of a command line.

### Figure 3 Scripts in Batch Files

If the computer that runs the Export Tool communicates directly with the SVP, you usually do not need to change scripts in **runWin.bat** and **runUnix.bat**. However, you might need to edit the java command script in your text editor in some occasions, for example:

- if the name of your command file is not **command.txt**
- if you moved your command file to a different directory
- if you do not want to save log files in the "log" directory
- if you want to name log files as you like

If the computer that runs the Export Tool communicates with the SVP via a proxy host, you need to edit the java command script in your text editor. When editing the java command script, you need to specify the host name (or the IP address) and the port number of the proxy host. For example, if the host name is *Jupiter* and the port number is *8080*, the resulting command script is as follows:

#### Batch file for Windows computers (runWin.bat)

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dhttp.proxyHost=Jupiter
-Dhttp.proxyPort=8080 -Dmd.command=command.txt -Dmd.logpath=log sanproject.getmondar.RJMdMain
pause
```

#### Batch file for UNIX computers (runUnix.bat)

```
#!/bin/sh
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dhttp.proxyHost=Jupiter
-Dhttp.proxyPort=8080 -Dmd.command=command.txt -Dmd.logpath=log sanproject.getmondar.RJMdMain
```

**Note:** The "↵" symbol indicates the end of a command line.

#### Figure 4 Scripts in Batch Files (When Specifying the Host Name of a Proxy Host)

If the IP address of the proxy host is *158.211.122.124* and the port number is *8080*, the resulting command script is as follows:

#### Batch file for Windows computers (runWin.bat)

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -
Dhttp.proxyHost=158.211.122.124
-Dhttp.proxyPort=8080 -Dmd.command=command.txt -Dmd.logpath=log sanproject.getmondar.RJMdMain
pause
```

#### Batch file for UNIX computers (runUnix.bat)

```
#!/bin/sh
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -
Dhttp.proxyHost=158.211.122.124
-Dhttp.proxyPort=8080 -Dmd.command=command.txt -Dmd.logpath=log sanproject.getmondar.RJMdMain
```

**Note:** The "↵" symbol indicates the end of a command line.

#### Figure 5 Scripts in Batch Files (When Specifying the IP Address of a Proxy Host)

For detailed information about syntax of the java command, see section 3.13.

### 2.3.3 Running the Export Tool

To run the Export Tool and save monitoring data in files, you need to execute your batch file. To execute your batch file, you need to enter the name of the batch file at the command prompt and then press the <Enter> key (see Figure 6 for reference). If you are using a Windows computer, you can double-click the batch file to execute the batch file.

```
c:\WINDOWS> cd c:\export          ← Go to the directory containing runWin.bat
c:\export> runWin.bat              ← Execute runWin.bat
```

#### Figure 6 An Example of Executing a Batch File (on a Windows Computer)

When the Export Tool starts exporting monitoring data, dots (...) are issued to the standard output (for example, the command prompt). The dots increment as export processing continues (see Figure 7). If an internal error occurs, the exclamation mark (!) is issued to the standard output and the Export Tool attempts to restart exporting data. If the export processing restarts, dots reappear and increment until export processing finishes.

```

[ 2] svpip 158.214.135.57
[ 3] login User = expusr, Passwd = [*****]
:
:
[ 6] group Port
:
:
[20] apply
Start gathering port data
Target = 16, Total = 16
+---+---+---+---+---+---+---+---+---+---+
.....!
.....
End gathering port data

```

**Figure 7 Sample Command Prompt Outputs When the Export Tool Runs**

When the Export Tool finishes successfully, monitoring data is usually compressed in ZIP-format archive files. If you want to obtain CSV files, you need to decompress ZIP files and extract CSV files out of the ZIP files. If the operating system on your computer does not include a feature for decompressing ZIP files, you need to obtain software for decompressing files.

For a complete list of files to be saved by the Export Tool, see section 2.1.

**Notes:**

- When an internal error occurs during export processing, the exclamation mark (!) appears and then retries export processing. Usually, the Export Tool can retry processing up to three times. If export processing does not finish after three retries, you need to quit the command prompt and then run the Export Tool again. Note, however, that you can change the maximum number of retries by using the `retry` subcommand. For detailed information about the `retry` subcommand, see section 3.2.

If the error persists, contact your HP account support representative.

- If you specify the `nocompress` operand for the `option` subcommand, the Export Tool saves files in CSV format instead of ZIP format (for detailed information, see section 3.9). Note that, when files are saved in CSV format instead of ZIP format, the file saving process would take longer and the resulting files would be larger.
- Files saved by the Export Tool are often very large. The total file size for all the files can be as large as approximately 2 GB. For this reason, the exporting process might take a long time (see Table 11). If you want to export statistics spanning a long period of time, it is recommended that you use the Export Tool more than one time, rather than using the tool only one time to export the whole statistics. For example, if you want to export statistics spanning 24 hours, you could run the Export Tool eight times; each time you run the Export Tool, the tool should export statistics spanning three hours.

**Table 11 Estimate Examples of Time Required for Exporting Files**

Operand for the Group Subcommand	Estimated Time	Remarks
Port	5 minutes	This estimate assumes that the Export Tool should save statistics about 128 ports within a 24-hour period.
PortWWN	5 minutes	This estimate assumes that the Export Tool should save statistics about 128 ports within a 24-hour period.



Operand for the Group Subcommand	Estimated Time	Remarks
PPCG	5 minutes	This estimate assumes: <ul style="list-style-type: none"> <li>• There are eight SPM groups, and eight WWNs are registered on each SPM group.</li> <li>• There is a WWN that is not registered on any SPM group.</li> <li>• The Export Tool should save statistics about SPM groups and WWNs described above within a 24-hour period.</li> </ul>
LDEV	60 minutes	This estimate assumes: <ul style="list-style-type: none"> <li>• The Export Tool should save statistics about 8,192 logical volumes within a 24-hour period.</li> <li>• The Export Tool is used eight times. Each time the Export Tool is used, the tool obtains statistics within a 3-hour period.</li> </ul>
LU	60 minutes	This estimate assumes: <ul style="list-style-type: none"> <li>• The Export Tool should save statistics about 12,288 LUs within a 24-hour period.</li> <li>• The Export Tool is used eight times. Each time the Export Tool is used, the tool obtains statistics within a 3-hour period.</li> </ul>

- Whenever the Export Tool runs, it creates a new log file on your computer. Therefore, if you run the Export Tool repeatedly, the size of free space on your computer will be reduced. To secure free space on your computer, you are strongly recommended to delete log files regularly. For information about the directory containing log files, see section 3.13.
- For information about how to solve errors with the Export Tool, see Chapter 4.
- The Export Tool returns a termination code when the Export Tool finishes (see Table 12).

Table 12 Termination Codes that the Export Tool Returns

Termination Code	Meaning
0	The Export Tool finished successfully.
1	An error occurred when the <code>set</code> subcommand (see section 3.11 ) executed, because an attempt to switch to Modify mode failed. Some other user might have been logged on in Modify mode.
2	An error occurred due to some reason unrelated to SVP modes (that is, View mode and Modify mode).
3	An error occurred due to more than one reason. One of the reasons is that an attempt to switch to Modify mode failed when the <code>set</code> subcommand (see section 3.11) executed. Some other user might have been logged on in Modify mode.
4	The user ID has none of written permissions for Auto LUN XP, Continuous Access XP, and TrueCopy for z/OS®.

If you want to use a reference to a termination code in your batch file, do the following:

- To use such a reference in a Windows batch file, write **%errorlevel%** in the batch file.
- To use such a reference in a UNIX Bourne shell script, write **%?** in the shell script.
- To use such a reference in a UNIX C shell script, write **%status** in the shell script.

A reference to a termination code is used in the following example of a Windows batch file. If this batch file executes and the Export Tool returns the termination code 1 or 3, the command prompt displays a message that indicates the `set` subcommand fails.

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dmd.command=command.txt  
-Dmd.logpath=log sanproject.getmondat.RJMDMain ↵  
if %errorlevel%==1 echo THE SET SUBCOMMAND FAILED ↵  
if %errorlevel%==3 echo THE SET SUBCOMMAND FAILED ↵  
pause ↵
```

**Note:** The "↵" symbol indicates the end of a command line.

**Figure 8** Sample Batch File Including a Reference to Termination Code

## Chapter 3 Command Reference

This section explains the syntax of subcommands that you can write in your command file. This section also explains the syntax of the java command that should be used in your batch file.

### ■ Summary of available subcommands

Table 13 Available Subcommands

Subcommand	Description	See
svpip	Specifies the IP address or host name of the SVP.	Section 3.1
retry	Makes settings on retries of export processing.	Section 3.2
login	Uses a user ID and password to log the specified user in the SVP.	Section 3.3
show	Outputs the monitoring data collection period and collection interval.	Section 3.4
group	Specifies the type of monitoring data to be exported.	Section 3.5
shortrange	Specifies the term of monitoring data exported to files.	Section 3.6
longrange	Specifies the term of monitoring data exported to files.	Section 3.7
outpath	Specifies the directory to which monitoring data is exported.	Section 3.8
option	Specifies if monitoring data is compressed in ZIP files and if existing files and directories are overwritten or deleted when saving monitoring data.	Section 3.9
apply	Saves monitoring data specified by the group subcommand into files.	Section 3.10
set	Starts or ends monitoring a disk array and specifies the gathering interval in short range monitoring.	Section 3.11
help	Displays the on-line help for subcommands.	Section 3.12
java	Starts the Export Tool.	Section 3.13

### ■ Conventions used in this section

This section uses the following symbols and typefaces to explain syntax:

△

Indicates a space.

**bold**

Indicates characters that you must type as they are.

*italics*

Indicates a type of an operand. You do not need to type characters in italics as they are.

[ ]

Indicates one or more operands that can be omitted.

If two or more operands are enclosed by these square brackets and are delimited by vertical bars (|), you can select one of the operands. For detailed information, see Table 14.

{ }

Indicates that you must select one operand from the operands enclosed by the braces. Two or more operands are enclosed by the braces and are delimited by vertical bars (|). For detailed information, see Table 14.

Indicates that a previously used operand can be repeated. For detailed information, see Table 14.

Table 14 Syntax Descriptions

Syntax	The Syntax Indicates that You Can Write the Following Script
<b>connect</b> △ <i>ip-address</i>	connect 123.01.22.33
<b>destination</b> △[ <i>directory</i> ]	<ul style="list-style-type: none"> <li>destination</li> <li>destination c:\temp</li> </ul>
<b>compress</b> △[yes   no]	<ul style="list-style-type: none"> <li>compress</li> <li>compress yes</li> <li>compress no</li> </ul>
<b>answer</b> △{yes   no}	<ul style="list-style-type: none"> <li>answer yes</li> <li>answer no</li> </ul>
<b>ports</b> △[ <i>name</i> ][△...]	<ul style="list-style-type: none"> <li>ports</li> <li>ports port-1</li> <li>ports port-1 port-2</li> </ul>

#### ■ Notes on writing script in the command file

Note the following when you write script in your command file:

- Ensure that only one subcommand is used in one line.
- Note that empty lines in any command file will be ignored.
- Use a semicolon (;) if you want to insert a comment in your command file. If you enter a semicolon in one line, the remaining characters in that line will be regarded as a comment.

```

//////////
;;;  COMMAND FILE:  command.txt  ;;;;
//////////
svpip 158.214.135.57          ; IP address of SVP
login expusr "passwd"         ; Log onto SVP

```

Figure 9 Examples of Comments

#### ■ Viewing the on-line Help for subcommands

You can display the on-line Help to view the syntax of subcommands when you are working at the command prompt. To be able to view the on-line Help, you must use the **help** subcommand of the Export Tool. For detailed information about how to use the **help** subcommand, see section 3.12.

## 3.1 The svpip Subcommand

### Syntax

**svpip**△{*ip-address*|*host-name*}

### Description

The **svpip** subcommand specifies the IP address or the host name of the SVP.

### Operands

*ip-address*

Specifies the IP address of the SVP.

*host-name*

Specifies the host name of the SVP.

If the host name includes any character that is neither an alphanumeric nor a period, the host name must be enclosed by double quotation marks (").

### Example

The following example specifies the IP address of the SVP as 158.214.127.170.

```
svpip 158.214.127.170
```

## 3.2 The retry Subcommand

### Syntax

**retry**△[**time**=*m*]△[**count**=*n*]

### Description

The **retry** subcommand makes settings on retries of export processing.

When an internal error occurs during export processing, the Export Tool stops processing and then retries export processing. By default, the Export Tool can retry processing up to three times, but you can change the maximum number of retries by using the **retry** subcommand.

By default, the interval between one retry and the next retry is two minutes. You can change the interval by using the **retry** subcommand.

The **retry** subcommand must execute before the **login** subcommand executes.

### Operands

**time**=*m*

Specifies the interval between retries in minutes.

*m* is a value within the range of 1 to 59.

If this operand is omitted, the interval between retries is two minutes.

**count**=*n*

Specifies the maximum number of retries.

If *n* is 0, the number of retries is unlimited.

If this operand is omitted, the maximum number of retries is 3.

### Example

If the following command file is used, the interval between retries is five minutes and the maximum number of retries is 10.

```
svpip 158.214.135.57
retry time=5 count=10
login expusr passwd
show
group Port
shortrange 200404010850:200404010910
outpath out
option compress
apply
```

### 3.3 The login Subcommand

#### Syntax

**login**△*userid*△*password*

#### Description

The **login** subcommand uses a user ID and a password to log the specified user in the SVP.

The **svpip** subcommand must execute before the **login** subcommand executes.

The **login** subcommand fails if monitoring data does not exist in the SVP.

#### Operands

*userid*

Specifies the user ID for the SVP.

If the user ID includes any non-alphanumeric character, the user ID must be enclosed by double quotation marks ("").

**Note:** Be sure to specify a user ID that should be used exclusively with the Export Tool. For detailed information, see section 2.2.1.

*password*

Specifies the password of the user.

If the password includes any non-alphanumeric character, the password ID must be enclosed by double quotation marks ("").

#### Example

This example logs the user **expusr** into the SVP whose IP address is 158.214.127.170. The password is **pswd**.

```
svpip 158.214.127.170
login expuser pswd
```

## 3.4 The show Subcommand

### Syntax

**show**

### Description

The **show** subcommand outputs the following information to the standard output (for example, to the command prompt):

- The period during which monitoring data was collected onto the SVP (storing period).
- The interval at which the monitoring data was collected (gathering interval).

Auto LUN XP collects statistics by the two types of storing periods: *in short range* and *in long range*. In short-range monitoring, the monitoring data between 1 and 15 days is stored in the SVP, and in long-range monitoring, the monitoring data up to three months is stored in the SVP.

The **show** subcommand displays the storing period and the gathering interval for these two types of monitoring data: in short range and in long range.

For example, the show command outputs the following information:

Short Range	From: 2004/10/01 01:00	-	To: 2004/10/01 15:00	Interval : 1min
Long Range	From: 2004/09/01 00:00	-	To: 2004/10/01 15:00	Interval : 15min
Remote Copy	From: 2004/09/30 00:00	-	To: 2004/10/01 15:00	

Short Range indicates the storing period and gathering interval of the monitoring data stored in short range. Long Range indicates those of the monitoring data stored in long range. When you run the Export Tool, you can export the monitoring data within these periods into files. If you use the *shortrange* or *longrange* subcommand additionally, you can narrow the term of data to be exported (see section 3.6 or 3.7).

From indicates the starting time for collecting monitoring data. To indicates the ending time for collecting monitoring data.

Interval indicates the interval at which the monitoring data was collected (gathering interval). For example, Interval 15 min. indicates that monitoring data was collected at 15-minute intervals.

Storing periods output by the **show** subcommand is the same as the information displayed in the **Monitoring Term** area of the **Auto LUN XP** pane (see Figure 10).



The show subcommand outputs the period from April 28, 2004, 11:04 to May 3, 2004, 11:04.

The screenshot shows a web-based interface for monitoring storage performance. On the left is a blue sidebar with the text "Monitoring Term". The main area has a light blue background. It contains two sets of date and time pickers. The first set, on the left, has a "From" field with the value "2004 /05 /03 09 :34" and a "To" field with "2004 /05 /03 11 :04". The second set, on the right, has a "From" field with "2004/04/28 11:04" and a "To" field with "2004/05/03 11:04". These two fields in the second set are highlighted with red boxes. A red line connects the text box above to the "From" field of the second set. Below the date pickers, there is a "Real Time" radio button, a dropdown menu showing "5", and a "90 min." label. An "Apply" button is located at the bottom right.

Figure 10 Information output by the show subcommand

The **login** command must execute before the **show** subcommand executes.

### 3.5 The group Subcommand

#### Syntax

```
group△{PhyPG△[Short|Long]△[[parity-group-id]:[parity-group-id]][△…]|
    PhyLDEV△[Short|Long]△[[parity-group-id]:[parity-group-id]][△…]|
    PhyExG△[[exg-id]:[exg-id]][△…]|
    PhyExLDEV△[[exg-id]:[exg-id]][△…]|
    PhyProc△[Short|Long]|
    PhyCSW△[Short|Long]|
    PG△[[parity-group-id|exg-id]:[parity-group-id|exg-id]][△…]|
    LDEV△[[parity-group-id|exg-id]:[parity-group-id|exg-id]][△…]|
    Port△[[port-name]:[port-name]][△…]|
    PortWWN△[[port-name]:[port-name]][△…]|
    LU△[[port-name.host-group-id]:[port-name.host-group-id]][△…]|
    PPCG△[[SPM-group-name]:[SPM-group-name]][△…]|
    PPCGWWN△[[SPM-group-name]:[SPM-group-name]][△…]|
    RemoteCopy
}
```

#### Description

The **group** subcommand specifies the type of monitoring data that you want to export. This command uses an operand (such as **PhyPG** and **PhyLDEV** above) to specify a type of monitoring data.

Table 15 shows the monitoring data that can be saved into files by each operand, and the saved ZIP files. For details on the monitoring data saved in these files, see the tables indicated in the "See" column.

Table 15 Operands of the group Subcommand and Saved Monitoring Data

Operand	Pane of Auto LUN XP	Monitoring Data Saved in the File	Saved ZIP File	See
<b>PhyPG</b>	<b>Physical</b> tab in the <b>Auto LUN XP</b> pane	Usage statistics about parity groups	PhyPG_dat.ZIP (*1)	Table 2
<b>PhyLDEV</b>		Usage statistics about logical volumes	PhyLDEV_dat.ZIP (*1)	
<b>PhyExG</b>		Usage conditions about external volume groups	PhyExG_dat.ZIP	
<b>PhyExLDEV</b>		Usage conditions about external volumes	PhyExLDEV_dat.ZIP	
<b>PhyProc</b>		Usage statistics about channel processors, disk processors, and data recovery and reconstruction processors	PhyProc_dat.ZIP (*1)	
<b>PhyCSW</b>		Usage statistics about access paths and write pending rate	PhyCSW_dat.ZIP (*1)	
<b>PG</b>	<b>LDEV</b> tab in the <b>Auto LUN XP</b> pane	Statistics about parity groups or external volume groups	PG_dat.ZIP	Table 3

Operand	Pane of Auto LUN XP	Monitoring Data Saved in the File	Saved ZIP File	See
LDEV		Statistics about logical volumes in parity groups or in external volume groups	LDEV_XXXXX.ZIP (*2)	Table 4
Port	Port-LUN tab in the Auto LUN XP pane	Statistics about ports	Port_dat.ZIP	Table 5
PortWWN		Statistics about host bus adapters connected to ports	PortWWN_dat.ZIP	Table 6
LU		Statistics about LU paths	LU_dat.ZIP	Table 7
PPCG	WWN tab in the Auto LUN XP pane	Statistics about SPM groups	PPCG_dat.ZIP	Table 8
PPCGWWN		Statistics about host bus adapters belonging to SPM groups	PPCGWWN_dat.ZIP	Table 9
RemoteCopy	CA Monitor pane and TCz Monitor pane	Statistics about remote copy operations by Continuous Access XP and TrueCopy for z/OS®	RemoteCopy_dat.ZIP	Table 10

\*1: When you specify the **PhyPG**, **PhyLDEV**, **PhyProc**, or **PhyCSW** operand, you can select the storing period of the monitoring data to be exported from short range or long range. When you specify other operands, the monitoring data in short range is exported.

\*2: A ZIP file whose name begins with LDEV\_.

You can use the **group** subcommand more than one time in a command file. For example, you can write the following script:

```
group PortWWN CL1-A:CL1-B
group PPCG spmg01:spmg02
group RemoteCopy
```

If an operand is used more than one time in a command file, the last operand takes effect. In the example below, the first **group** subcommand does not take effect, but the second **group** subcommand takes effect:

```
group PortWWN CL1-A:CL1-B
group PortWWN CL2-A:CL2-B
```

Use an operand starting with **Phy** (for example, **PhyPG** or **PhyPROC** when you want to export data displayed in the **Physical** tab in the Auto LUN XP pane. Use other operands when you want to export data displayed in the **LDEV**, **Port-LUN**, and **WWN** tabs in the Auto LUN XP pane.

## Operands

**PhyPG**△[Short|Long]△[[parity-group-id]:[parity-group-id]](△...]

Use this operand when you want to export statistics about parity group usage rates, which are displayed in the **Physical** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, the file name will be PhyPG\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1 .

You can use the **Short** or **Long** option to select the storing period of the monitoring data to be exported. If you specify **Short**, the exported file will contain statistics in short range for up to 15 days. If you specify **Long**, the exported file will contain statistics in long range for up to three months (that is, up to 93 days). If neither **Short** nor **Long** is specified, statistics both in the short range and long range will be exported.

When you specify variables *parity-group-id*, you can narrow the range of parity groups whose monitoring data are to be exported. *parity-group-id* is a parity group ID. The colon (:) indicates a range. For example, 1-1:1-5 indicates parity groups from 1-1 to 1-5.

Ensure that the *parity-group-id* value on the left of the colon is smaller than the *parity-group-id* value on the right of the colon. For example, you can specify PhyPG 1-1:1-5, but you cannot specify PhyPG 1-5:1-1. Also, you can specify PhyPG 1-5:2-1, but you cannot specify PhyPG 2-1:1-5.

If *parity-group-id* is not specified, the monitoring data of all the parity groups will be exported.

#### PhyLDEV△[Short|Long]△[[*parity-group-id*]:[*parity-group-id*]](△...]

Use this operand when you want to export statistics about logical volume usage rates, which are displayed in the **Physical** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, the file name will be PhyLDEV\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1.

You can use the **Short** or **Long** option to select the storing period of the monitoring data to be exported. If you specify **Short**, the exported file will contain statistics in short range for up to 15 days. If you specify **Long**, the exported file will contain statistics in long range for up to three months (that is, up to 93 days). If neither **Short** nor **Long** is specified, statistics both in the short range and long range will be exported.

When you specify variables *parity-group-id*, you can narrow the range of parity groups whose monitoring data are to be exported. *parity-group-id* is a parity group ID. The colon (:) indicates a range. For example, 1-1:1-5 indicates parity groups from 1-1 to 1-5.

Ensure that the *parity-group-id* value on the left of the colon is smaller than the *parity-group-id* value on the right of the colon. For example, you can specify PhyLDEV 1-1:1-5, but you cannot specify PhyLDEV 1-5:1-1. Also, you can specify PhyLDEV 1-5:2-1, but you cannot specify PhyLDEV 2-1:1-5.

If *parity-group-id* is not specified, the monitoring data of all the logical volumes will be exported.

#### PhyExG△[[*exg-id*]:[*exg-id*]](△...]

Use this operand when you want to export statistics about external volume groups, which are displayed in the **Physical** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, the file name will be PhyExG\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1.

When you specify variables *exg-id*, you can narrow the range of external volume groups whose monitoring data are to be exported. *exg-id* is an ID of an external volume group. The colon (:) indicates a range. For example, E1-1:E1-5 indicates external volume groups from E1-1 to E1-5.

Ensure that the *exg-id* value on the left of the colon is smaller than the *exg-id* value on the right of the colon. For example, you can specify PhyExG E1-1:E1-5, but you cannot specify PhyExG E1-5:E1-1. Also, you can specify PhyExG E1-5:E2-1, but you cannot specify PhyExG E2-1:E1-5.

If *exg-id* is not specified, the monitoring data of all the external volume groups will be exported.

### PhyExLDEV△[[*exg-id*]:[*exg-id*]]△[...]

Use this operand when you want to export statistics about logical volumes in external volume groups, which are displayed in the **Physical** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, the file name will be PhyExLDEV\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1.

When you specify variables *exg-id*, you can narrow the range of external volume groups whose monitoring data are to be exported. *exg-id* is an ID of an external volume group. The colon (:) indicates a range. For example, E1-1:E1-5 indicates external volume groups from E1-1 to E1-5.

Ensure that the *exg-id* value on the left of the colon is smaller than the *exg-id* value on the right of the colon. For example, you can specify PhyExLDEV E1-1:E1-5, but you cannot specify PhyExLDEV E1-5:E1-1. Also, you can specify PhyExLDEV E1-5:E2-1, but you cannot specify PhyExLDEV E2-1:E1-5.

If *exg-id* is not specified, the monitoring data of all the external volumes will be exported.

### PhyProc△[Short | Long]

Use this operand when you want to export the following statistics, which are displayed in the **Physical** tab of the **Auto LUN XP** pane:

- Usage rates of channel processors
- Usage rates of disk processors
- Usage rates of DRRs (data recovery and reconstruction processors)

When statistics are exported to a ZIP file, the file name will be PhyProc\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1.

You can use the **Short** or **Long** option to select the storing period of the monitoring data to be exported. If you specify **Short**, the exported file will contain statistics in short range for up to 15 days. If you specify **Long**, the exported file will contain statistics in long range for up to three months (that is, up to 93 days). If neither **Short** nor **Long** is specified, statistics both in the short range and long range will be exported.

### PhyCSW△[Short | Long]

Use this operand when you want to export the following statistics, which are displayed in the **Physical** tab of the **Auto LUN XP** pane:

- Usage rates of access paths between channel adapters and cache memories
- Usage rates of access paths between disk adapters and cache memories
- Usage rates of access paths between channel adapters and the shared memory
- Usage rates of access paths between disk adapters and the shared memory
- Usage rates of access paths between cache switches and cache memories
- Write pending rates

When statistics are exported to a ZIP file, the file name will be PhyCSW\_dat.ZIP. For details on the statistics exported by this operand, see Table 2 in section 2.1.

You can use the **Short** or **Long** option to select the storing period of the monitoring data to be exported. If you specify **Short**, the exported file will contain statistics in short range for up to 15 days. If you specify **Long**, the exported file will contain statistics in long range for up to three months (that is, up to 93 days). If neither **Short** nor **Long** is specified, statistics both in the short range and long range will be exported.

**PG**△[[*parity-group-id*|*exg-id*]:[*parity-group-id*|*exg-id*]](△...]

Use this operand when you want to export statistics about parity groups or external volume groups, which are displayed in the **LDEV** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, the file name will be PG\_dat.ZIP. For details on the statistics exported by this operand, see Table 3 in section 2.1.

When you specify variables *parity-group-id* or *exg-id*, you can narrow the range of parity groups or external volume groups whose monitoring data are to be exported. *parity-group-id* is a parity group ID. *exg-id* is an ID of an external volume group. The colon (:) indicates a range. For example, 1-1:1-5 indicates parity groups from 1-1 to 1-5. E1-1:E1-5 indicates external volume groups from E1-1 to E1-5.

Ensure that the *parity-group-id* or *exg-id* value on the left of the colon is smaller than the *parity-group-id* or *exg-id* value on the right of the colon. For example, you can specify PG 1-1:1-5, but you cannot specify PG 1-5:1-1. Also, you can specify PG 1-5:2-1, but you cannot specify PG 2-1:1-5.

If neither of *parity-group-id* nor *exg-id* is specified, the monitoring data of all the parity groups and external volume groups will be exported.

**LDEV**△[[*parity-group-id*|*exg-id*]:[*parity-group-id*|*exg-id*]](△...]

Use this operand when you want to export statistics about logical volumes, which are displayed in the **LDEV** tab of the **Auto LUN XP** pane. When statistics are exported to a ZIP file, multiple ZIP files whose names are beginning with LDEV\_ will output. For details on the statistics exported by this operand, see Table 5 in section 2.1.

When you specify variables *parity-group-id* or *exg-id*, you can narrow the range of parity groups or external volume groups whose monitoring data are to be exported. *parity-group-id* is a parity group ID. *exg-id* is an ID of an external volume group. The colon (:) indicates a range. For example, 1-1:1-5 indicates parity groups from 1-1 to 1-5. E1-1:E1-5 indicates external volume groups from E1-1 to E1-5.

Ensure that the *parity-group-id* or *exg-id* value on the left of the colon is smaller than the *parity-group-id* or *exg-id* value on the right of the colon. For example, you can specify LDEV 1-1:1-5, but you cannot specify LDEV 1-5:1-1. Also, you can specify LDEV 1-5:2-1, but you cannot specify LDEV 2-1:1-5.

If neither of *parity-group-id* nor *exg-id* is specified, the monitoring data of all the logical volumes (including external volumes) will be exported.

**Port**△[[*port-name*]:[*port-name*]](△...]

Use this operand when you want to export port statistics, which are displayed in the **Port-LUN** tab of the **Auto LUN XP** pane. When statistics are exported in a ZIP file, the file name will be Port\_dat.ZIP. For details on the statistics exported by this operand, see Table 5 in section 2.1.

When you specify variables *port-name*, you can narrow the range of ports whose monitoring data are to be exported. *port-name* is a port name. The colon (:) indicates a range. For example, CL3-a:CL3-c indicates ports from CL3-a to CL3-c.

Ensure that the *port-name* value on the left of the colon is smaller than the *port-name* value on the right of the colon. Note that the smallest *port-name* value is *CL1-A* and the largest *port-name* value is *CL4-r*. The following formula illustrates which value is smaller than which value:

CL1-A < CL1-B < ... < CL2-A < CL2-B < ... < CL3-a < CL3-b < ... < CL4-a < ... < CL4-r

For example, you can specify Port CL1-C:CL2-A, but you cannot specify Port CL2-A:CL1-C. Also, you can specify Port CL3-a:CL3-c, but you cannot specify Port CL3-c:CL3-a.

If *port-name* is not specified, the monitoring data of all the ports will be exported.

**PortWWN**△[[*port-name*]:[*port-name*]](△...]

Use this operand when you want to export statistics about host bus adapters (WWNs) connected to ports, which are displayed in the **Port-LUN** tab of the **Auto LUN XP** pane. When statistics are exported in a ZIP file, the file name will be PortWWN\_dat.ZIP. For details on the statistics exported by this operand, see Table 6 in section 2.1.

When you specify variables *port-name*, you can narrow the range of ports whose monitoring data are to be exported. *port-name* is a port name. The colon (:) indicates a range. For example, CL3-a:CL3-c indicates ports from CL3-a to CL3-c.

Ensure that the *port-name* value on the left of the colon is smaller than the *port-name* value on the right of the colon. Note that the smallest *port-name* value is CL1-A and the largest *port-name* value is CL4-r. The following formula illustrates which value is smaller than which value:

CL1-A < CL1-B < ... < CL2-A < CL2-B < ... < CL3-a < CL3-b < ... < CL4-a < ... < CL4-r

For example, you can specify PortWWN CL1-C:CL2-A, but you cannot specify PortWWN CL2-A:CL1-C. Also, you can specify PortWWN CL3-a:CL3-c, but you cannot specify PortWWN CL3-c:CL3-a.

If *port-name* is not specified, the monitoring data of all the host bus adapters will be exported.

**LU**△[[*port-name.host-group-id*]:[*port-name.host-group-id*]](△...]

Use this operand when you want to export statistics about LU paths, which are displayed in the **Port-LUN** tab of the **Auto LUN XP** pane. When statistics are exported in a ZIP file, the file name will be LU\_dat.ZIP. For details on the statistics exported by this operand, see Table 7 in section 2.1.

When you specify variables *port-name.host-group-id*, you can narrow the range of LU paths whose monitoring data are to be exported. *port-name* is a port name. *host-group-id* is the ID of a host-group (that is, a host storage domain). The host-group (host storage domain) ID must be a hexadecimal numeral. The colon (:) indicates a range. For example, CL1-C.01:CL1-C.03 indicates the range from the host-group #01 of the CL1-C port to the host-group #03 of the CL1-C port.

Ensure that the value on the left of the colon is smaller than the value on the right of the colon. Note that the smallest *port-name* value is CL1-A and the largest *port-name* value is CL4-r. The following formula illustrates which *port-name* value is smaller than which *port-name* value:

CL1-A < CL1-B < ... < CL2-A < CL2-B < ... < CL3-a < CL3-b < ... < CL4-a < ... < CL4-r

For example, you can specify LU CL1-C.01:CL2-A.01, but you cannot specify LU CL2-A.01:CL1-C.01. Also, you can specify LU CL1-C.01:CL1-C.03, but you cannot specify LU CL1-C.03:CL1-C.01.

If *port-name.host-group-id* is not specified, the monitoring data of all the LU paths will be exported.

#### PPCG△[[*SPM-group-name*]:[*SPM-group-name*]](△...]

Use this operand when you want to export statistics about SPM groups, which are displayed in the **WWN** tab of the **Auto LUN XP** pane. When statistics are exported in a ZIP file, the file name will be PPCG\_dat.ZIP. For details on the statistics exported by this operand, see Table 1 in section 2.1.

When you specify variables *SPM-group-name*, you can narrow the range of SPM groups whose monitoring data are to be exported. *SPM-group-name* is the name of an SPM group. If the name includes any non-alphanumeric character, the name must be enclosed by double quotation marks ("). The colon (:) indicates a range. For example, Grp01:Grp03 indicates a range of SPM groups from Grp01 to Grp03.

Ensure that the *SPM-group-name* value on the left of the colon is smaller than the *SPM-group-name* value on the right of the colon. Note that numerals are smaller than letters and lowercase letters are smaller than uppercase letters. In the following formulae, values are arranged so that smaller values are on the left and larger values are on the right:

- 0 < 1 < 2 < ... < 9 < a < b < ... < z < A < B < ... < Z
- cygnus < raid < Cancer < Pisces < RAID < RAID5

Regardless of whether you specify or omit SPM group names, the exported CSV files contain statistics about host bus adapters that do not belong to any SPM groups. The exported CSV files use the heading named Not Grouped to indicate statistics about these host bus adapters.

If *SPM-group-name* is not specified, the monitoring data of all the SPM groups will be exported.

#### PPCGWWN△[[*SPM-group-name*]:[*SPM-group-name*]](△...]

Use this operand when you want to export statistics about host bus adapters (WWNs) belonging to SPM groups, which are displayed in the **WWN** tab of the **Auto LUN XP** pane. When statistics are exported in a ZIP file, the file name will be PPCGWWN\_dat.ZIP. For details on the statistics exported by this operand, see Table 9 in section 2.1.

When you specify variables *SPM-group-name*, you can narrow the range of SPM groups whose monitoring data are to be exported. *SPM-group-name* is the name of an SPM group. If the name includes any non-alphanumeric character, the name must be enclosed by double quotation marks ("). The colon (:) indicates a range. For example, Grp01:Grp03 indicates a range of SPM groups from Grp01 to Grp03.

Ensure that the *SPM-group-name* value on the left of the colon is smaller than the *SPM-group-name* value on the right of the colon. Note that numerals are smaller than letters and lowercase letters are smaller than uppercase letters. In the following formulae, values are arranged so that smaller values are on the left and larger values are on the right:

- 0 < 1 < 2 < ... < 9 < a < b < ... < z < A < B < ... < Z
- cygnus < raid < Cancer < Pisces < RAID < RAID5

If *SPM-group-name* is not specified, the monitoring data of all the host bus adapters will be exported.



## RemoteCopy

Use this operand when you want to export statistics about remote copy operations, which are displayed in the **CA Monitor** pane and the **TCz Monitor** pane. By using this operand, you can export monitoring data about remote copy operations performed by Continuous Access XP and TrueCopy for z/OS® in the whole disk array. When statistics are exported to a ZIP file, the file name will be RemoteCopy\_dat.ZIP. For details on the statistics exported by this operand, see Table 10 in section 2.1.

The following example exports statistics about host bus adapters and SPM groups. This example also exports statistics in the **Physical** tab of the Auto LUN XP pane:

```
group PortWWN  
group PPCG  
group Physical
```

The following example exports statistics about three ports (CL1-A, CL1-B, and CL1-C):

```
group Port CL1-A:CL1-C
```

The following example exports statistics about six ports (CL1-A to CL1-C, and CL2-A to CL2-C)

```
group Port CL1-A:CL1-C CL2-A:CL2-C
```

The following example exports statistics about the parity-group 1-3:

```
group PG 1-3:1-3
```

The following example exports statistics about the parity-group 1-3 and other parity-groups whose ID is larger than 1-3 (for example, 1-4 and 1-5):

```
group PG 1-3:
```

The following example exports statistics about the external volume groups E1-1 to E1-5:

```
group PG E1-1:E1-5
```

The following example exports statistics about the parity-group 1-3 and other parity-groups whose ID is smaller than 1-3 (for example, 1-1 and 1-2):

```
group LDEV :1-3
```

The following example exports statistics about LU paths for the host-group (host storage domain) ID 07 for the port CL1-A:

```
group LU CL1-A.01:CL1-A.01
```

## 3.6 The shortrange Subcommand

### Syntax

**shortrange**△[[yyyyMMddhhmm][{+|-}hhmm]:[yyyyMMddhhmm][{+|-}hhmm]]

### Description

The **shortrange** subcommand enables you to specify a term of monitoring data to be exported into files. Use this subcommand when you want to narrow the export-target term within the stored data.

The **shortrange** subcommand is valid for monitoring data in short range. The monitoring data in short range which can be saved by the Export Tool is the contents displayed in the following panes:

- The **Auto LUN XP** pane with selecting **shortrange** as the storing period
- The **CA Monitor** and **TCz Monitor** panes

All the monitoring items are stored in short range. Therefore, you can use the **shortrange** subcommand whichever operand you specify to the **group** subcommand. If you run the Export Tool without specifying the **shortrange** subcommand, the data stored in the whole monitoring term will be exported.

The **login** subcommand must execute before the **shortrange** subcommand executes.

### Operands

The value on the left of the colon (:) specifies the starting time of the period. The value on the right of the colon specifies the ending time of the period. Specify the term within "Short Range From XXX To XXX" which is output by the **show** subcommand.

If no value is specified on the left of the colon, the starting time for collecting monitoring data is assumed. If no value is specified on the right of the colon, the ending time for collecting monitoring data is assumed. The starting and ending times for collecting monitoring data are displayed in the **Monitoring Term** area in the Auto LUN XP pane (see Figure 11).

The screenshot shows a dialog box titled "Monitoring Term" with a blue header. It contains two main sections for time selection. The left section has "From" and "To" labels with corresponding time pickers. The "From" picker shows "2004 /05 /03 09 :34" and the "To" picker shows "2004 /05 /03 11 :04". The right section has "From" and "To" labels with corresponding time pickers. The "From" picker shows "2004/04/28 11:04" and the "To" picker shows "2004/05/03 11:04". Red boxes highlight the "2004/04/28 11:04" and "2004/05/03 11:04" values. Red lines connect these values to labels above them: "Starting time for collecting statistics" for the left "From" value and "Ending time for collecting statistics" for the right "To" value. Below the time pickers, there is a "Real Time" radio button, a "5" in a box, and a "90 min." label. An "Apply" button is at the bottom right.

Figure 11 The Starting Time and the Ending Time for Collecting Monitoring Data

*yyyyMMddhhmm*

*yyyyMMdd* indicates the year, the month, and the day. *hhmm* indicates the hour and the minute.

If *yyyyMMddhhmm* is omitted on the left of the colon, the starting time for collecting monitoring data is assumed. If *yyyyMMddhhmm* is omitted on the right of the colon, the ending time for collecting monitoring data is assumed.

*+hhmm*

Adds time (*hhmm*) to *yyyyMMddhhmm* if *yyyyMMddhhmm* is specified. For example, **200401230000+0130** indicates Jan. 23, 2004. 01:30.

Adds time to the starting time for collecting monitoring data if *yyyyMMddhhmm* is omitted.

*-hhmm*

Subtracts time (*hhmm*) from *yyyyMMddhhmm* if *yyyyMMddhhmm* is specified. For example, **200401230000-0130** indicates Jan. 22, 2004. 22:30.

Subtracts time from the ending time for collecting monitoring data, if *yyyyMMddhhmm* is omitted.

**Note:** If the last two digit of the time on the left or right of the colon (:) is not a multiple of the sampling interval, the time will automatically be changed so that the last two digits is a multiple of the sampling interval. If this change occurs to the time on the left of the colon, the time will be smaller than the original time. If this change occurs to the time on the right of the colon, the time will be larger than the original time. The following are the examples:

- **If the time on the left is 10:15, the time on the right is 20:30, and the sampling interval is 10 minutes:**

The time on the left will be changed to 10:10 because the last two digits of the time is not a multiple of 10 minutes. The time on the right will remain unchanged because the last two digits of the time is a multiple of 10 minutes.

- **If the time on the left is 10:15, the time on the right is 20:30, and the sampling interval is 7 minutes:**

The time on the left will be changed to 10:14 because the last two digits of the time is not a multiple of 7 minutes. The time on the right will be changed to 20:35 because of the same reason.

## Example

The examples below assume that:

- the starting time for collecting monitoring data is Jan. 1, 2004, 00:00
- the ending time for collecting monitoring data is Jan. 2, 2004, 00:00

shortrange 200401010930:200401011730

The Export Tool saves monitoring data within the range of Jan. 1, 9:30-17:30.

shortrange 200401010930:

The Export Tool saves monitoring data within the range of Jan. 1, 9:30 to Jan. 2, 00:00.

shortrange:200401011730

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-17:30.

shortrange:+0001:

The Export Tool saves monitoring data within the range of Jan. 1, 0:01 to Jan. 2, 00:00.

shortrange-0001:

The Export Tool saves monitoring data within the range of Jan. 1, 23:59 to Jan. 2, 00:00.

shortrange:+0001

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-00:01.

shortrange:-0001

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-23:59.

shortrange+0101:-0101

The Export Tool saves monitoring data within the range of Jan. 1, 1:01-22:59.

shortrange 200401010900+0130:200401011700-0130

The Export Tool saves monitoring data within the range of Jan. 1, 10:30-15:30.

shortrange 200401010900-0130:200401011700+0130

The Export Tool saves monitoring data within the range of Jan. 1, 7:30-18:30.

shortrange 200401010900-0130:

The Export Tool saves monitoring data within the range of Jan. 1, 7:30 to Jan. 2, 00:00.

## 3.7 The longrange Subcommand

### Syntax

**longrange**△[[yyyyMMddhhmm][{+|-}ddhhmm]:[yyyyMMddhhmm][{+|-}ddhhmm]]

### Description

The **longrange** subcommand enables you to specify a term of monitoring data to be exported into files. Use this subcommand when you want to narrow the export-target term within the stored data.

The **longrange** subcommand is valid for monitoring data in long range. The monitoring data in long range is the contents displayed in the **Physical** tab of the **Auto LUN XP** pane with selecting **longrange** as the storing period. The monitoring items whose data can be stored in long range are limited. Table 16 shows the monitoring items to which the **longrange** subcommand can be applied, and also shows the operands to export those monitoring items.

Table 16 Monitoring Items To Which the longrange Subcommand Can be Applied

Monitoring Data	Operands of the group subcommand
Usage statistics about parity groups	PhyPG Long
Usage statistics about logical volumes	PhyLDEV Long
Usage statistics about channel processors, disk processors, and data recovery and reconstruction processors	PhyProc Long
Usage statistics about access paths and write pending rate	PhyCSW Long

If you run the Export Tool without specifying the **longrange** subcommand, the data stored in the whole monitoring term will be exported.

The **login** subcommand must execute before the **longrange** subcommand executes.

### Operands

The value on the left of the colon (:) specifies the starting time of the period. The value on the right of the colon specifies the ending time of the period. Specify the term within "Long Range From XXXTo XXX" which is output by the **show** subcommand.

If no value is specified on the left of the colon, the starting time for collecting monitoring data is assumed. If no value is specified on the right of the colon, the ending time for collecting monitoring data is assumed. The starting and ending times for collecting monitoring data are displayed in the **Monitoring Term** area in the Auto LUN XP pane (see Figure 12).

Starting time for collecting statistics

Ending time for collecting statistics

Monitoring Term

From: 2004/05/09 00:00

To: 2004/05/10 00:00

Real Time

1Day(s)

Apply

**Figure 12 The Starting Time and the Ending Time for Collecting Monitoring Data**

*yyyyMMddhhmm*

*yyyyMMdd* indicates the year, the month, and the day. *hhmm* indicates the hour and the minute.

If *yyyyMMddhhmm* is omitted on the left of the colon, the starting time for collecting monitoring data is assumed. If *yyyyMMddhhmm* is omitted on the right of the colon, the ending time for collecting monitoring data is assumed.

*+ddhhmm*

Adds time (*ddhhmm*) to *yyyyMMddhhmm* if *yyyyMMddhhmm* is specified. For example, **200401120000+010130** indicates Jan. 13, 2004. 01:30.

Adds time to the starting time for collecting monitoring data if *yyyyMMddhhmm* is omitted.

*-ddhhmm*

Subtracts time (*ddhhmm*) from *yyyyMMddhhmm* if *yyyyMMddhhmm* is specified. For example, **200401120000-010130** indicates Jan. 10, 2004. 22:30.

Subtracts time from the ending time for collecting monitoring data if *yyyyMMddhhmm* is omitted.

**Note:** Ensure that *mm* is 00, 15, 30, or 45. If you do not specify *mm* in this way, the value on the left of the colon (:) will be rounded down to one of the four values. Also, the value on the right of the colon will be rounded up to one of the four values. For example, if you specify 200401010013:200401010048, the specified value is regarded as 200401010015:200401010100.

## Example

The examples below assume that:

- the starting time for collecting monitoring data is Jan. 1, 2004, 00:00
- the ending time for collecting monitoring data is Jan. 2, 2004, 00:00

longrange 200401010930:200401011730

The Export Tool saves monitoring data within the range of Jan. 1, 9:30-17:30.

longrange 200401010930:

The Export Tool saves monitoring data within the range of Jan. 1, 9:30 to Jan. 2, 00:00.

longrange:200401011730

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-17:30.

longrange +000015:

The Export Tool saves monitoring data within the range of Jan. 1, 0:15 to Jan. 2, 00:00.

longrange -000015:

The Export Tool saves monitoring data within the range of Jan. 1, 23:45 to Jan. 2, 00:00.

longrange :+000015

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-00:15.

longrange :-000015

The Export Tool saves monitoring data within the range of Jan. 1, 0:00-23:45.

longrange +000115:-000115

The Export Tool saves monitoring data within the range of Jan. 1, 1:15-22:45.

longrange 200401010900+000130:200401011700-000130

The Export Tool saves monitoring data within the range of Jan. 1, 10:30-15:30.

longrange 200401010900-000130:200401011700+000130

The Export Tool saves monitoring data within the range of Jan. 1, 7:30-18:30.

longrange 200401010900-000130:

The Export Tool saves monitoring data within the range of Jan. 1, 7:30 to Jan. 2, 00:00.

## 3.8 The `outpath` Subcommand

### Syntax

`outpath`△[*path*]

### Description

The **outpath** subcommand specifies the directory to which monitoring data will be exported.

### Operands

*path*

Specifies the directory in which files will be saved.

If the directory includes any non-alphanumeric character, the directory must be enclosed by double quotation marks ("). If you want to specify a back slash (\) in the character string enclosed by double quotation marks, repeat the back slash twice (\\).

If the specified directory does not exist, this subcommand creates a directory that has the specified name.

If this operand is omitted, the current directory is assumed.

### Example

The following example saves files in the directory **C:\Project\out** in a Windows computer:

```
outpath "C:\Project\out"
```

The following example saves files in the **out** directory in the current directory:

```
outpath out
```



## 3.9 The option Subcommand

### Syntax

**option**△[**compress** | **nocompress**]△[**ask** | **clear** | **noclear**]

### Description

The **option** subcommand specifies the following:

- whether to compress monitoring data in ZIP files
- whether to overwrite or delete existing files and directories when saving monitoring data in files

### Operands

The two operands below specify whether to compress CSV files into ZIP files. If none of these operands is specified, **compress** is assumed:

#### **compress**

Compresses data in ZIP files. To extract CSV files out of a ZIP file, you will need to decompress the ZIP file.

#### **nocompress**

Does not compress data in ZIP files and saves data in CSV files.

The three operands below specify whether to overwrite or delete an existing file or directory when the Export Tool saves files. If none of these operands is specified, **ask** is assumed:

#### **ask**

Displays a message that asks whether to delete existing files or directories.

#### **clear**

Deletes existing files and directories and then saves monitoring data in files.

#### **noclear**

Overwrites existing files and directories.

### Example

The following example saves monitoring data in CSV files, not in ZIP files:

```
option nocompress
```

## 3.10 The **apply** Subcommand

### Syntax

**apply**

### Description

The **apply** subcommand saves monitoring data specified by the **group** subcommand into files.

The **login** subcommand must execute before the **apply** subcommand executes.

The **apply** subcommand does nothing if the **group** subcommand executes.

The settings made by the **group** subcommand will be reset when the **apply** subcommand finishes.

## 3.11 The set subcommand

### Syntax

**set**△[switch={*m*|off}]

### Description

The **set** subcommand starts or ends monitoring the disk array (that is, starts or ends collecting performance statistics). The **set** subcommand also specifies the gathering interval (interval of collecting statistics) in short range monitoring.

If you want to use the **set** subcommand, you must use the **login** subcommand (see section 3.3) to log onto the SVP. Ensure that the **set** subcommand executes immediately before the Export Tool finishes.

Executing the **set** subcommand generates an error in the following conditions:

- Some other user is being logged onto the SVP in Modify mode.
- Maintenance operations are being performed at the SVP.

If an error occurs, do the following:

- Ensure that all the users who are logged onto the SVP are not in Modify mode. If any user is logged on in Modify mode, ask the user to switch to View mode.
- Wait until maintenance operations finish at the SVP, so that the **set** subcommand can execute.

#### *Notes:*

- Your batch files can include script that should execute when an error occurs. For information about writing such a script in your batch file, refer to **Notes** in section 2.3.3.
- When the **set** subcommand starts or ends the monitoring or changes the gathering interval after the **Auto LUN XP** pane is started, the contents displayed in the **Auto LUN XP** pane does not change automatically in conjunction with the **set** subcommand operation. To display the current monitoring status in the **Auto LUN XP** pane, click the **Refresh** button.

### Operands

switch={*m*|off}

To start monitoring, specify the gathering interval (interval of collecting statistics) of monitoring data at *m*. Specify a value between 1 and 15 *minutes*. *m* is the gathering interval in short range monitoring by Auto LUN XP. Note that the gathering interval in long range is fixed to 15 minutes.

To end monitoring, specify **off**.

If this operand is omitted, the **set** subcommand does not make settings for starting or ending monitoring.

## Example

The following command file starts monitoring disks, ports, LU paths, and host bus adapters. This example also starts monitoring resource usage rates:

The following command file saves port statistics and then ends monitoring ports:

```
svpip 158.214.135.57
login expusr passwd
show
group Port
shortrange 200404010850:200404010910
apply
set switch=off
```

The following command file starts monitoring remote copy operations. The sampling time interval is 10 minutes:

```
svpip 158.214.135.57
login expusr passwd
set switch=10
```

## 3.12 The help Subcommand

### Syntax

**help**

### Description

The **help** subcommand displays the on-line help for subcommands.

If you want to view the on-line help, it is recommended that you create a batch file and a command file that are exclusively used for displaying the on-line help. For detailed information, see *Example* below.

### Example

In this example, a command file (cmdHelp.txt) and a batch file (runHelp.bat) are created in the **C:\export** directory in a Windows computer:

- Command file (c:\export\cmdHelp.txt):

```
help
```

- Batch file (c:\export\runHelp.bat):

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dmd.command=cmdHelp.txt  
-Dmd.logpath=log sanproject.getmondar.RJMdMain ↵  
pause ↵
```

**Note:** The "↵" symbol in this batch file example indicates the end of a command line.

In this example, you must do either of the following to view the on-line Help:

- Double-click runHelp.bat with the mouse.
- Go to the **c:\export** directory at the command prompt, enter **runHelp** or **runHelp.bat** and then press the <Enter> key.

### 3.13 The Java Command for Exporting Data In Files

#### Syntax

```
java△-classpath△class-path△property-parameters△sanproject.getmondai.RJMdMain
```

#### Description

This java command starts the Export Tool.

To start the Export Tool, you must write this java command in your batch file and then run the batch file.

#### Operands

##### *class-path*

Specifies the path to the class file of the Export Tool.

The path must be enclosed in double quotation marks (").

##### *property-parameters*

You can specify the following parameters. At least you must specify **-Dmd.command**.

- **-Dhttp.proxyHost=***host-name-of-proxy-host*, or  
**-Dhttp.proxyHost=***IP-address-of-proxy-host*

Specifies the host name or the IP address of a proxy host. You must specify this parameter if the computer that runs the Export Tool communicates with the SVP via a proxy host.

- **-Dhttp.proxyPort=***port-number-of-proxy-host*

Specifies the port number of a proxy host. You must specify this parameter if the computer that runs the Export Tool communicates with the SVP via a proxy host.

- **-Dmd.command=***path-to-command-file*

Specifies the path to the command file.

- **-Dmd.logpath=***path-to-log-file*

Specifies the path to log files. A log file will be created whenever the Export Tool executes.

If this parameter is omitted, log files will be saved in the current directory.

- **-Dmd.logfile=***name-of-log-file*

Specifies the name of the log file.

If this parameter is omitted, log files are named **exportMMddHHmmss.log**.

*MMddHHmmss* indicates when the Export Tool executed. For example, the log file **export0101091010.log** contains log information about Export Tool execution at Jan. 1, 09:10:10.

## Example

The following example assumes that the computer running the Export Tool communicates with the SVP via a proxy host. In this example, the host name of the proxy host is **Jupiter**, and the port name of the proxy host is **8080**:

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dhttp.proxyHost=Jupiter  
-Dhttp.proxyPort=8080 -Dmd.command=command.txt -Dmd.logpath=log sanproject.getmondar.RJMdMain  
↵
```

In the following example, a log file named **export.log** will be created in the **log** directory below the current directory when the Export Tool executes:

```
java -classpath ".\lib\JSanExport.jar;.\lib\JSanRmiServer.jar" -Dmd.command=command.txt  
-Dmd.logfile=export.log -Dmd.logpath=log sanproject.getmondar.RJMdMain ↵
```

**Note:** The "↵" symbol indicates the end of a command line.

## Chapter 4 Troubleshooting the Export Tool

Table 17 explains possible problems with the Export Tool and probable solutions to the problems.

Table 17 Troubleshooting the Export Tool

Possible Problems	Probable Causes and Recommended Action
You cannot run the batch file.	<ul style="list-style-type: none"> <li>The path to the Java Virtual Machine (java.exe) might not be defined in the PATH environment variable. If this is true, you must add that path to the PATH environment variable. For information about how to add a path to the environment variable, please see the documentation for your operating system.</li> <li>An incorrect version of Java Runtime Environment (JRE) might be installed on your computer. To check the JRE version, enter the following command at the Windows command prompt or the UNIX console window:  <pre>java -version</pre> If the version is incorrect, please install the correct version of JRE.</li> </ul>
The Export Tool stops and the processing does not continue.	<p>The command prompt window might be in pause mode.</p> <p>The command prompt window will be in pause mode if you click the command prompt window when the Export Tool is running.</p>
The command prompt window was displaying progress of the export processing, but the window stopped displaying progress before the processing stops. The progress information does not seem to be updated anymore.	<p>To cancel pause mode, you need to activate the command prompt window and then press the &lt;ESC&gt; key. If you do not cancel pause mode, an error will occur. The error message ID will be (1, 4011).</p>
An error occurs and the processing stops.	<p>If the error message ID is (1, 4011), the user is forcibly logged off and the processing stops because the SVP does not respond. Please run the Export Tool again. If the error persists, contact your HP account support representative.</p> <p>If the error message ID is (2, 5510), probable error causes and solutions are:</p> <ul style="list-style-type: none"> <li>An internal processing is being performed in the disk array. Alternatively, another user is changing configurations. Wait for a while and then run the Export Tool again.</li> <li>Maintenance operations are being performed on the disk array. Wait until the maintenance operations finish and then run the Export Tool again.</li> </ul> <p>If the error message ID is none of the above, see Table 18 below.</p>
The monitoring data in the CSV file includes "-1".	<p>The value "-1" indicates that Auto LUN XP failed to obtain monitoring data for some reasons. Probable reasons are:</p> <ul style="list-style-type: none"> <li>Auto LUN XP attempted to obtain statistics when an operation for rebooting the disk array is in progress.</li> <li>A heavy workload is imposed on the disk array.</li> </ul>



If an error occurs when you run the Export Tool, error messages are issued to the standard output (for example, the command prompt) and the log file. Table 18 lists the Export Tool messages and recommended actions against errors.

Table 18 Messages to be Issued by the Export Tool

Possible Problems	Probable Causes and Recommended Action
Connection to the server has not been established.	Connection to the server has not been established. Use the login subcommand.
Execution stops.	Execution stops. Please remove errors.
Illegal character: " <i>character</i> "	An illegal character is used. Please use legal characters.
Invalid length: <i>token</i>	The length is invalid. Specify a value that has a correct length.
Invalid range: <i>range</i>	The specified range is invalid. Specify the correct range.
Invalid value: " <i>value</i> "	The specified value is invalid. Specify a correct value.
Login failed	<p>An attempt to log into the SVP failed. Probable causes are:</p> <ol style="list-style-type: none"> <li>1. An incorrect operand is used for the <i>svpip</i> subcommand.</li> <li>2. An incorrect operand is used for the <i>login</i> subcommand.</li> <li>3. The specified user ID is used by another person, and the person is being logged in.</li> <li>4. Two users are currently displaying the Auto LUN XP pane.</li> <li>5. Two users are currently executing the Export Tool.</li> </ol> <p><b>Note.</b> If the error cause is 4 or 5 above, do either of the following:</p> <ul style="list-style-type: none"> <li>• Ask one of the users to display another pane.</li> <li>• Ask one of the users to log off.</li> <li>• Wait for one of the users to quit the Export Tool.</li> </ul>
Missing command file	The command file is not specified. Specify the name of the command file correctly.
Missing group name	No operand is specified in the group subcommand. Specify operands for the subcommand.
Missing host name	No host name is specified. Please specify a host name.
Missing output directory	No directory is specified for saving files. Please specify the directory for saving files.
Missing password	The Export Tool cannot find the user ID, which is used to log into the SVP. Specify the password.
Missing svpip	The svpip subcommand is not used. Use the svpip command.
Missing time range	Specify the time range.
Missing user ID	The Export Tool cannot find the user ID, which is used to log into the SVP. Specify the user ID.

Possible Problems	Probable Causes and Recommended Action
Out of range: <i>range</i>	The value is outside the range.  If the shortrange subcommand or the longrange subcommand is used, specify a value within the range from the monitoring start time to the monitoring end time.  If the set subcommand is used with the switch operand, specify a value within the range of 1 to 15.
Permission Denied.	The user ID does not have the required permission.  The user ID needs to have at least one of the write permissions for Auto LUN XP and TrueCopy for z/OS®.
RMI server error ( <i>part-code, error-number</i> )	An error occurs at the RMI server. For detailed information, please refer to <i>Command View Error Codes</i> .
Unable to display help message	The Export Tool cannot display the on-line help due to a system error.
Unable to get serial number	The Export Tool cannot obtain the serial number due to a system error.
Unable to get time range for monitoring	The SVP does not contain monitoring data.
Unable to read command file: <i>file</i>	The Export Tool cannot read the command file. Specify the name of the command file correctly.
Unknown host: <i>host</i>	The Export Tool cannot resolve the host name. Please specify the correct host name.
Unsupported command: " <i>command</i> "	The Export Tool does not support the specified command. Please specify a correct command.
Unsupported operand: <i>operand</i>	The specified operand is not supported. Please correct the specified operand.
Unsupported option: <i>option</i>	The specified option is not supported. Please correct the specified option.
Some file exists in <i>path</i> . What do you do? clear(c)/update(u)/stop(p) You selected "action". Is it OK? (y/n)	Files exist in <i>path</i> . <ul style="list-style-type: none"><li>• If you want to clear the files, press the &lt;c&gt; key.</li><li>• If you want to overwrite the files, press the &lt;u&gt; key.</li><li>• If you want to stop the operation, press the &lt;p&gt; key.</li></ul> When you press a key, a message appears and asks whether to perform the specified action. <ul style="list-style-type: none"><li>• To perform the specified action, press the &lt;y&gt; key.</li><li>• To cancel the specified action, press the &lt;n&gt; key.</li></ul>
Specify the following subcommand before login subcommand: retry	The retry subcommand is written in an incorrect position in the command file.  Write the retry subcommand before the login subcommand.

Possible Problems	Probable Causes and Recommended Action
Start gathering group data Target = xxx, Total = yyy End gathering group data	<p>The Export Tool starts collecting data specified by the <i>group</i> subcommand.</p> <p>The number of <i>targets</i> is <i>xxx</i> and the total number is <i>yyy</i> (see <b>Note</b> below).</p> <p>The Export Tool ends collecting data.</p> <p><b>Note:</b> For example, suppose that the disk array contains 100 parity-groups and the command file contains the following command line:  group PG 1-1:1-2</p> <p>The Export Tool displays the message "Target=2, Total=100", which means that the group subcommand specifies two parity-groups and that the total number of parity-groups in the subsystem is 100.</p>
Syntax error: " <i>line</i> "	<p>A syntax error is detected in a command line in your command file. Check the command line for the syntax error and then correct the script.</p> <p>Note that some operands must be enclosed by double quotation marks (""). Please check the command line to find whether double quotation marks are missing.</p>

## Chapter 5 Limitations for Storage Partition Administrators

If the user type of your user ID is storage partition administrator, you can use only Auto LUN XP and the Export Tool among Auto LUN XP programs. In this case, you cannot use Volume Migration nor Server Priority Manager.

Also, when you log in as a storage partition administrator, the available functions of Auto LUN XP and the Export Tool are limited. This section explains these limitations of Auto LUN XP and the Export Tool.

### 5.1 Limitations of Auto LUN XP

The Auto LUN XP functions which are limited when you logged in as a storage partition administrator are shown in Table 18. For the pane of Auto LUN XP displayed when you logged in as a storage partition administrator, see Figure 13.

Table 19 Limitations for Storage Partition Administrators (Auto LUN XP)

Pane	Limited function
<b>Physical</b> tab in the <b>Auto LUN XP</b> pane	<ul style="list-style-type: none"><li>The tree and list display only the information in the SLPR (storage management logical partition) allocated to the user ID.</li><li>The <b>Volume Migration</b> button is not displayed (see Figure 13). Therefore, the user cannot start Volume Migration.</li></ul>
<b>LDEV</b> tab in the <b>Auto LUN XP</b> pane	The tree and list display only the information in the SLPR allocated to the user ID.
<b>Port-LUN</b> tab in the <b>Auto LUN XP</b> pane	<ul style="list-style-type: none"><li>The tree and list display only the information in the SLPR allocated to the user ID.</li><li>The <b>SPM</b> button is not displayed (see Figure 13). Therefore, the user cannot start Server Priority Manager.</li></ul>
<b>WWN</b> tab in the <b>Auto LUN XP</b> pane	The <b>WWN</b> tab is not displayed (see Figure 13). The user cannot view the traffics between host bus adapters and ports.
<b>CA Monitor</b> pane <b>TCz Monitor</b> pane <b>CA Journal</b> Monitor pane <b>URz Monitor</b> pane	These panes are not displayed (see Figure 13). The user cannot view the information about remote copy operations performed by Continuous Access XP, TrueCopy for z/OS®, Continuous Access XP Journal, and Universal Replicator for z/OS®.
<b>Monitoring Options</b> pane	The <b>Monitoring Options</b> pane is not displayed (see Figure 13). The user cannot start or stop monitoring, or change the gathering interval.

Performance Management

**Performance Monitor**

Monitoring Switch : Enable  
Gathering Interval : 1 min.

**Monitoring Term**

From 2004 /05 /03 09 :34 To 2004/05/02 11:04  
To 2004 /05 /03 11 :04  
Real Time 5 90 min. **Apply**

**Monitoring Data** shortrange IOPS

Port-LUN LDEV Physical

Subsystem  
CL1-A(E8)  
CL1-B(E4)  
00:Host-20  
01:Host-21  
02:Host-22  
03:Host-23  
CL1-X(E2)  
CL2-a(E1)

LUN	CU:LDEV	Emulation	Paths	Current(IOPS)
0000	00:00	OPEN-3 * 1	2	-
0001	00:00	OPEN-3 * 1	2	-
0002	00:01	OPEN-3 * 1	2	-

Current Control:  
No Control

**Draw**

Chart Y Axis Rate 100000 ☒ Detail IO

IOPS

100000  
90000  
80000  
70000  
60000  
50000  
40000  
30000  
20000  
10000  
0

5/3 09:40 10:00 10:20 10:40 11:00

IO(Seq.)  
IO(Rnd.)

0001

The **SPM** button and the **Volume Migration** button are not displayed.

- The monitoring data about remote copy operations performed by Continuous Access XP and TrueCopy for z/OS® cannot be exported.
- A storage partition administrator cannot use the set subcommand to start or stop monitoring, or change the gathering interval.